

Weekly Report

2018.01.02-2018.01.07

1.This Week

Summarization Form

Task	Progress	Time
Power Grid New Projects	Decide the details of the system.	February
Power Grid Visualization Survey	Gathering materials.	
VIS 2018 paper	Idea evaluation and make plans.	4.1

Power Flow Project in Ningbo

- 1.Discuss with students in Ningbo about details of the system, including:
 - how to correlate the topology view with the parameter control panel
 - decide which parameters need to be controlled
 - decide the layout of the topology view
 - decide the granularity of the parallel bar chart
 - deal with the issue that there're more than on ac lines between two buses
 - check the connectivity between areas of buses

Idea evaluation for VIS 2018

1. There could be some issues if we use visualization results to run deep learning classification problems:

- picture classification will lose temporal patterns (but raw time series data won't)
- the dimension of each data sample is too high to convey in a restricted resolution picture (the appropriate size of a picture classification problem is 256*256)
- the amount of data samples is too small (about 3500), the methods would easily get overfitting

because of the aforementioned reasons, the result of running deep learning on visualization pictures wouldn't be very good

2.The current idea is:

- use raw time series to run deep learning classification methods (LSTM)
- run LSTM based on units of bus rather than on units of data sample. In this way, we can get the class of all buses and uses the buses with higher classification probability to re-train the model to improve the model accuracy.
- because the deep learning method is based on single bus, which loses the correlation relationships between buses, we implement a visual interface to present the deep learning outputs and dig correlation patterns.

3.The new 20G data is parsed into static files.

4.Chen Zexian and Lin Liwen is learning basic react+redux framework. Lin Liwen is further working on large grid visualization.

Others

1.Gather materials on machine aided power grid analysis of Prof. He Haibo and Yu Tao. Write the report.

Papers (from deep learning session from vast)

1.Bubble Treemaps for Uncertainty Visualization

2.Towards Better Analysis of Deep Convolutional Neural Networks

3.keras tutorial on LSTM method

2.TODO

1. other projects of power grid started.
2. VIS 2018 paper idea evaluation.